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10/827,260

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EXAMINER

FLORES, LEON

ART UNIT

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2611

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/827,260 | Applicant(s) HOSOKAWA, TAISUKE | |
| | Examiner LEON FLORES | Art Unit 2611 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15 and 17-19 is/are rejected.
- 7) ☒ Claim(s) 14, 16 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims (1-20) have been considered but are moot in view of the new ground(s) of rejection.

Response to Remarks

Applicant asserts that, *"the Examiner fails to identify where Applicant's claimed invention, "which of the positive values and the negative values are larger in number"*.

The examiner respectfully disagrees. The reference of Uda does teach "which of the positive values and the negative values are larger in number" in fig. 3 & col. 5, lines 43-54. Uda discloses "the negative offset detection counter has not counted up to the predetermined value, but the positive offset detection counter has counted up to the predetermined value", and vice versa.

Applicant further asserts that, *"there is no teaching or suggestion in either Hirata or Uda to combine or substitute the positive offset detection counter 203, the negative offset detection counter 204 and the offset look up memory table 206 of Uda with the integrator 5 of Hirata"*.

The examiner respectfully disagrees. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge

generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). Furthermore, both references are in the same field of endeavor, and one of ordinary skills in the art would have known how to combine these two references in order to come up with applicant's claimed invention.

Applicant finally asserts that, *"there is no teaching or suggestion in either Hirata or Kondo to combine or substitute the inter-pilot block phase shift averaging section 5 and the inter-symbol phase shift averaging section 4 with the integrator 5 of Hirata"*.

The examiner respectfully disagrees. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). Furthermore, both references are in the same field of endeavor, and one of ordinary skills in the art would have known how to combine these two references in order to come up with applicant's claimed invention.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation of “wherein majority determination is performed aided weighting is executed in accordance with one of reception power and magnitude of a phase moving amount”, as claimed in claim 14, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims (1-20) are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1, 3, and 17 the further limitation of, “a detection value conversion unit which converts” is indefinite. The applicant is silent in regards to what is this unit converting. For the purpose of art considerations on the merits, this limitation will be construed as adding some correction to the output of the majority determination unit.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

1. Claims (1, 3, 9-13, 17-18) are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirata (US Publication 2001/0004373 A1) in view of Uda (US Patent 6,226,505 B1), and further in view of Kondo.(US Patent 6,597,728 B1)

Re claim 1, Hirata discloses a frequency offset detection processing system comprising: a TCXO (Temperature Compensated Crystal Oscillator, Temperature Compensated X'tal Oscillator) which generates a reference frequency; a demodulation unit which demodulates a reception signal; a frequency offset detection unit which detects a frequency offset from a phase moving amount between symbols of adjacent pilot signals; and an AFC (Auto Frequency Control) control unit (See fig. 7), a TCXO control unit which corrects TCXO control on the basis of the frequency offset calculated by said correction value calculation unit.(See fig. 7)

But the reference of Hirata fails to explicitly teach that wherein said AFC control unit comprises: a majority determination unit which determines whether each of phase moving amount detection values by a plurality of frequency offsets, which are detected for a predetermined time and read out from said frequency offset detection unit, is a positive value or a negative value, and totalizes to determine which of the positive values and the negative values are larger in number; a detection value conversion unit which converts the phase moving amount detection values read out from said frequency offset detection unit in accordance with a majority determination result from said majority determination unit.

However, Uda does. (See figs 2 & 3 & col. 5, lines 43-64) Uda discloses an

automatic frequency correction apparatus that determines if the offset is either a positive or negative by means of a positive counter and a negative counter, and based on this result, it is capable of selecting a correction amount.

Furthermore, Uda discloses a majority determination unit (203, 204) which determines whether each of phase moving amount detection values by a plurality of frequency offsets, which are detected for a predetermined time and read out from said frequency offset detection unit, is a positive value or a negative value, and totalizes to determine which of the positive values and the negative values are larger in number (col. 5, lines 43-54); a detection value conversion unit which converts the phase moving amount detection values read out from said frequency offset detection unit in accordance with a majority determination result from said majority determination unit.(col. 5, lines 61-64)

Taking the combined teachings of Hirata and Uda as a whole, it would have been obvious to one of ordinary skills in the art to have incorporated this feature into the system of Hirata, in the manner as claimed and as taught by Uda, for the benefit of performing automatic frequency control.

The combination of Hirata and Uda discloses the limitations as claimed above, except they fail to explicitly teach an averaging processing unit which executes processing for adding the phase moving amount detection values read out from said frequency offset detection unit and converted by said detection value conversion unit and dividing a sum by the number of added values; a correction value calculation unit which calculates a frequency offset from the phase moving amounts after averaging

processing by said averaging processing unit.

However, Kondo does. (See fig. 2) Kondo discloses an averaging processing unit which executes processing for adding the phase moving amount detection values read out from said frequency offset detection unit (See fig. 2: 4 & 5), a correction value calculation unit which calculates a frequency offset from the phase moving amounts after averaging processing by said averaging processing unit.(See fig. 2: 6)

Taking the combined teachings of Hirata, Uda, and Kondo as a whole, it would have been obvious to one of ordinary skill in the art to have incorporated these features into the system of Hirata, as modified by Uda, in the manner as claimed and as taught by Kondo, for the benefit of determining frequency correction. (See col. 8, lines 31-35)

Claim 3 is a method claim corresponding to system claim 1. Hence, the steps performed in method claim 3 would have necessitated the elements in system claim 1. Therefore, claim 3 has been analyzed and rejected w/r to claim 1 above.

Re claim 9, the combination of Hirata, Uda, and Kondo further discloses that wherein said majority determination unit determines the shift direction of a frequency offset by majority determination before averaging processing and making the signs of detection values coincide from the majority determination result. (In Kondo, see fig. 2: 2 & 4. Furthermore, a phase shift detection section determines the phase shift before averaging.)

Re claim 10, the combination of Hirata, Uda, and Kondo further discloses that wherein said majority determination unit determines the shift direction of the frequency offset. (In Uda, see figs. 2 & 3, and col. 5, lines 43-54)

Re claim 11, the combination of Hirata, Uda, and Kondo further discloses that wherein detection values with a sign, which are determined as smaller in number by the majority determination unit, are regarded as values whose shift direction of the frequency offset is erroneously determined. (In Uda, see col. 5, lines 43-54)

Re claim 12, the combination of Hirata, Uda, and Kondo further discloses that wherein when it is determined as a result of majority determination that a number of negative detection values is smaller, the negative detection values are converted. (In Uda, see col. 5, lines 43-64)

Re claim 13, the combination of Hirata, Uda, and Kondo further discloses that wherein the signs of all detection values are made to coincide by determining the shift direction before the averaging processing. (In Kondo, see fig. 2: 2 & 4. Furthermore, a phase shift detection section determines the phase shift before averaging.)

Claim 17 has been analyzed and rejected w/r to claim 1 above.

Re claim 18, the combination of Hirata, Uda, and Kondo further discloses that

wherein said majority determination unit determines the shift direction of a frequency offset by majority determination before averaging processing and making the signs of detection values coincide from the majority determination result. (In Kondo, see fig. 2: 2 & 4. Furthermore, a phase shift detection section determines the phase shift before averaging.)

2. Claims (2 & 4-8) are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirata (US Publication 2001/0004373 A1), Uda (US Patent 6,226,505 B1), and Kondo.(US Patent 6,597,728 B1), as applied to claim 1 above, and further in view of Maltsev et al. (hereinafter Maltsev) (US Publication 2004/0190438 A1)

Re claim 2, the combination of Hirata, Uda, and Kondo fails to explicitly teach that wherein in converting the phase moving amount detection values, when it is determined as the majority determination result that the number of negative detection values is smaller, said detection value conversion unit converts the negative detection values to $+360^\circ +$ the negative detection values; and when it is determined as the majority determination result that the number of positive detection values is smaller, said detection value conversion unit converts the positive detection values to $-360^\circ +$ the positive detection values.

However, the combination of of Hirata, Uda, and Kondo does suggest that a correction amount selection section selects a required level from correction amount data of a plurality of levels which are stored in the memory on the basis of the state determination result. (In Uda, see figs 2 & 3, and col. 5, lines 61-64)

Art Unit: 2611

Therefore, it would have been obvious to one of ordinary skills in the art to have incorporated this feature into the system of Hirata, as modified by Uda and Kondo, for the benefit of performing automatic frequency control.

But the combination of Hirata, Uda, and Kondo fails to explicitly teach that the amount of correction is ± 360 .

However, Maltsev does. (See fig. 2: 200 & paragraph 27) Maltsev discloses a phase corrector that adjusts phase shift by a multiple of 360 degrees. When the phase difference exceeds 180 degrees, and the sign of the first phase shift estimate is positive it adds +360. However, when the sign is negative it adds -360 . Furthermore, one skilled in the art would know that frequency correction may be employed by taking the average phase shifts between adjacent symbols. In this case, if we take the average at the output of the phase corrector, when the phase has been corrected, the frequency can be corrected.

Taking the combined teachings of Hirata, Uda, Kondo, and Maltsev as a whole, it would have been obvious to one of ordinary skill in the art to have incorporated these features into the system of Hirata, as modified by Uda and Kondo, in the manner as claimed and as taught by Kondo, for the benefit of determining frequency correction.

Claim 4 is a method claim corresponding to system claim 2. Hence, the steps performed in method claim 4 would have necessitated the elements in system claim 2. Therefore, claim 4 has been analyzed and rejected w/r to claim 2 above.

Art Unit: 2611

Re claim 5, the combination of Hirata, Uda, Kondo, and Maltsev further discloses that wherein in converting the phase moving amount detection values, when it is determined as the majority determination result that the number of negative detection values is smaller, said detection value conversion unit converts the negative detection values to $+360^\circ$ + the negative detection values. (This claim has been rejected w/r to claim 2 above.)

Re claim 6, the combination of Hirata, Uda, Kondo, and Maltsev further discloses that wherein in converting the phase moving amount detection values, when it is determined as the majority determination result that the number of positive detection values is smaller, said detection value conversion unit converts the positive detection values to -360° + the positive detection values. (This claim has been rejected w/r to claim 2 above.)

Re claim 7, the combination of Hirata, Uda, Kondo, and Maltsev further discloses that wherein the detection value conversion further comprises in converting the phase moving amount detection values, when it is determined as the majority determination result that the number of negative detection values is smaller, converting the negative detection values to $+360^\circ$ + the negative detection values. (This claim has been rejected w/r to claim 2 above.)

Re claim 8, the combination of Hirata, Uda, Kondo, and Maltsev further discloses

Art Unit: 2611

that wherein the detection value conversion further comprises in converting the phase moving amount detection values, when it is determined as the majority determination result that the number of positive detection values is smaller, converting the positive detection values to $-360^\circ +$ the positive detection values. (This claim has been rejected w/r to claim 2 above.)

3. Claims (15 & 20) are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirata (US Publication 2001/0004373 A1) Uda (US Patent 6,226,505 B1), and Kondo (US Patent 6,597,728 B1), as applied to claim 1 above, and further in view of Applicant Admitted Prior art. (hereinafter Prior art)

Re claim 15, the combination of Hirata, Uda, and Kondo fails to explicitly teach that wherein a distribution of the phase shift detection values after conversion in accordance with a majority determination result from said majority determination result in a Gaussian distribution.

However, Prior art does. (See figs 11A & 11B & page 4, lines 12-27) Prior art discloses that wherein a distribution of the phase shift detection values after conversion in accordance with a majority determination result from said majority determination result in a Gaussian distribution.

Taking the combined teachings of Hirata, Uda, Kondo, and Prior art as a whole, it would have been obvious to one of ordinary skill in the art to have incorporated these features into the system of Hirata, as modified by Uda and Kondo, in the manner as claimed and as taught by Kondo, for the benefit of optimizing the communication

system.

Claim 20 has been analyzed and rejected w/r to claim 15 above.

Allowable Subject Matter

4. Claims (14, 16 & 20) are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON FLORES whose telephone number is (571)270-1201. The examiner can normally be reached on Mon-Fri 7-5pm Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2611

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/L. F./
Examiner, Art Unit 2611
April 2, 2008

/David C. Payne/
Supervisory Patent Examiner, Art Unit 2611